EFFECTS OF ALTERING GROWTH RATE ON CARCASE TRAITS IN A RANGE OF BEEF GENOTYPES THAT VARY IN POTENTIAL FOR YIELD AND FAT DEPOSITION

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We present data on a range of carcase and meat quality traits in beef cattle that were collected as part of a large ongoing study to improve our knowledge of how these are affected by genotype and growth rate (Wilkins *et al.* 2002). Traits that affect the quantity and quality of meat, product specification and carcase value were measured. Fatness affects market price by acceptability to various markets, while dressing percentage and retail beef yield can have a large effect on profitability.

Sire genotypes (see caption, Table 1) provided a wide range of potential for yield and fat deposition in the carcase of the progeny. Steers were given fast or slow growth treatments (~ 0.8 or 0.6 kg/d) between weaning and feedlot finishing to reach a targeted 400 kg group entry weight. Following feedlot finishing (around 100 days on feed), MSA (Meat Standards Australia) chiller assessment data were collected and retail beef yield was estimated using portable imaging equipment ("VIAscan" system), applied at the 12/13 rib quartering site. Data from 2 feedlot intakes, each with growth treatment comparisons, were analysed by the Genstat REML procedure, with main effects of carcase type, growth rate and kill group, and accounting for variation between sires within type.

Table 1. Least squares means for dressing percentage, P8 and 12/13 rib fat depths (mm), eye muscle areas (EMA, cm^2) and estimated retail beef yield (RBY, %) in crossbred steers given different (slow or fast) growth treatments post weaning. AngY, AngM and AngYM are Angus sires chosen on EBV for high retail beef yield, high marbling or both; Ch (Charolais) and Lim (Limousin) from high yielding European cattle; WB (Black Wagyu) and WR (Red Wagyu) from expected high marbling breeds.

	Growth	AngY	AngM	AngYM	Ch	Lim	WagB	WagR	Sig.Type l.s.d.	TOTAL	Sig. Growth
Dressing	Slow	55.2	54.5	55.7	55.7	56.7	55.7	55.8	P<0.05	55.64	ns
%	Fast	55.6	55.1	55.2	55.4	55.9	55.9	54.5	1.23	55.35	
Hot P8	Slow	20.3	21.4	19.8	14.6	15.6	21.4	18.7	P<0.01	18.82	ns
fat depth	Fast	21.4	22.2	20.8	13.6	17.8	17.8	19.2	4.0	19.00	
Rib	Slow	11.1	13.0	10.8	7.0	9.0	11.4	10.2	P<0.01	10.34	P<0.01
fat depth	Fast	13.8	15.3	12.3	6.9	11.2	11.9	10.1	3.6	11.64	
EMA	Slow	85.4	78.4	83.4	87.0	92.9	84.6	82.9	P<0.01	84.93	ns
	Fast	85.8	82.8	86.4	95.1	89.7	88.8	87.9	6.18	88.06	
RBY	Slow	68.0	67.2	68.0	69.3	69.4	67.3	68.2	P<0.01	68.20	ns
	Fast	68.0	67.1	67.5	69.8	68.9	67.9	68.2	0.93	68.20	

There were significant differences due to genotype in all traits (Table 1). The fat deposition potential across genotypes was reflected in the P8 and rib fat depths. Laboratory assays of actual intramuscular fat were available for only the first of these cohorts, and are reported by Toohey *et al*. (2004), as are the data for marbling scores – these traits were correlated with the fat depths here. Variation in EMA across genotypes was generally reflected in yield. Differences due to growth treatment were non-significant except for greater rib fat depth in the fast groups, with a similar trend for P8 fat. Results suggest fast growth during grow-out (shortening the period to turnoff) may be a good production strategy, provided it can be achieved economically. There was no evidence of any compromise to end-product acceptability in the fast growth groups in these steers, but this needs further confirmation as well as evaluation in grass-finished groups.

WILKINS, J.F., IRWIN, J., MCKIERNAN, W.A. and BARWICK, S.A. (2002). *Anim. Prod. Aust.* **24,** 370.
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